

CalNex Forecast Notes - Friday, May 7, 2010

California Synoptic Overview - Dennis King (dking@arb.ca.gov)

Today (Friday)

- Zonal flow over most of CA
- Coastal winds from the northwest 10-20 mph with localized gusts to 25 mph for Northern CA
- Coastal winds from the northwest 20-30 mph along the Central Coast
- Coastal winds drop off from Point Conception to the Mexican Border..
- On-shore flow into SF Delta and all coastal interior valleys
- Light southerly flow in the Sac Valley.
- Light northwesterly flow in the Northern SJV
- Moderate winds in the Southern SJV
- Potential for pollution episode is low in most areas

Tomorrow (Saturday)

- Broad trough deepens tomorrow
- Winds will increase slightly, but remain from the general same direction
- Potential for pollution episode is lower

Sunday

- Tough deepen further with a weak system moving into Northern CA
- Slight chance of rain in the north
- Winds will be continue on-shore
- Low potential for pollution episode

Anticipated activity for P3

Fri: Fly SJV or South Coast Basin

Points of potential interest:

Blowing dust plume Nipomo Mesa (southern portion of San Luis Obispo County Coast) - midday/afternoon.

Convergence zone between NW flow along coast and E-NE flow over the inland Coast Range.

Layers with high concentration of ozone aloft over inland portions of the Coast Range.

Sat: Fly-day

Sun/Mon: likely no-fly

Large Scale Transport Notes - Brad Pierce (brad.pierce@noaa.gov))

LA/SF AIRNOW Site Comparison

- Good O3 AQ at both LA and SF during FX period
- Moderate PM2.5 AQ at LA during FX period
- Good to Moderate PM2.5 AQ at SF during FX period
- RAQMS underestimates moderate O3 levels at Riverside on Thurs May 06, 2010

500m RDF 00Z 05/08 (Fri Afternoon)

- Narrow plume of long-range transported +local polluted air moves onshore at 500m.
- Moderate (5-10 ppbv/day) background O3 P-L over SF.
- Previous Background O3 P-L enhancement remains over Western AZ

500m RDF 00Z 05/09 (Sat Afternoon)

- Next intercontinental polluted air mass arriving at low altitudes (less lagrangian mean descent) from North West at 500m.
- Weak (~5 ppbv/day) background O3 P-L over LA and SF
- Previous Background O3 P-L enhancement remains over Western AZ

500m RDF 00Z 05/10 (Sun Afternoon)

- Next intercontinental polluted air mass remains offshore at 500m.
- Low (<5 ppbv/day) background O3 P-L over LA
- Previous Background O3 P-L enhancement dissipating over Western AZ

500m RDF 00Z 05/11 (Mon Afternoon)

- Intercontinental polluted air mass circulating within High offshore at 500m. May head onshore in Northern CA during next FX period
- Weak (~5 ppbv/day) background O3 P-L over LA
- Previous Background O3 P-L enhancement still holding over Central AZ

Trinidad Head MPLNET

- Dust event at Trinidad Head well analyzed by RAQMS in terms of altitude (below 5km) and loading (AOD=0.1)
- New intercontinental aerosol pollution event FX to descend from 7-4km at Trinidad Head on May 09, 2010

Forecast Details

San Francisco Bay Area - Danny Kam (dkam@airquality.org)

Note:

smaller red font in parenthesis e.g., (10kt) indicates prediction from previous forecast which differs from the forecast today

Friday

- NNW 15 kt turning to 10 kt throughout most of the day, increase to 20 kt at night
- Onshore flow at night toward foothills
- 1,000 ft in the afternoon

Saturday

- Light NW wind, becoming 15kt W wind;
- Onshore flow almost equally toward foothills, SV, and SJV
- MBL 1,000 ft on decreasing, then increasing trend to 2,000 (3,000) at night

Sunday

- Light W turns NW in the afternoon, and strengthen to 15 kt at night
- MBL varies between 1,000 to 5,000 ft

Monday

- Moderate NW on Monday morning, becomes 20 kts in the afternoon
- Onshore flow

Tuesday & Wednesday

- Moderate NW wind becomes stronger on Tuesday; mostly light NW wind on Wednesday morning

Sacramento Valley - Danny Kam (dkam@airquality.org)

Note:

smaller red font in parenthesis e.g., (subsiding N wind limit downslope flow to eastern SV) indicates prediction from previous forecast which differs from the forecast today

Friday

- Light variable wind and light W wind in the morning; W 5kt at night
- Moderate AM downslope flow; PM downslope flow not well developed
- PM PBL at 6,500 ft

Saturday

- Light W in the morning (before the eddy develop) becomes moderate SW 5 -10 kt
- Onshore flow through the delta in the afternoon
- AM PBL between 500 to 1,5000 ft; 6,000 in the PM
- Eddy just SW of Sacramento, develops at 14Z decays at 17Z (20Z), smaller than previous model

Sunday

- Light SW in the morning, then turns moderate W for southern SV and remain very light for northern SV; light wind at night
- Light AM downslope flow, no PM downslope yet

- AM PBL around 1,500 ft, PM PBL 7,000 ft to 9,000 ft
- Small eddy in the northern SJV (SW of Sutter's Butte), but short lived

Monday

- Light SW and W, generally calm
- Light AM downslope flow

Tuesday & Wednesday

- Moderate N on both Tuesday and Wednesday morning, weakens at night

San Joaquin Valley - Jon Klassen (jon.klassen@valleyair.org)

Wind Flow:

Friday May 7

Surface Winds: The surface observations this morning show calm to light and variable wind flow throughout the SJV. The Tracy wind profiler shows a light northwesterly flow at the higher elevations. CANSAC shows flow into the Valley via the Altamont and Pacheco passes, and strengthening as the day progresses. In the southern SJV, the NW flow is weak yet there seems to be a general outflow from Kern county into SLO county by midday.

Boundary Layer Mixing: No aircraft soundings were available this morning in Fresno and Bakersfield. Mixing should improve to 4,500 feet in the northern SJV.

Air Quality: Expected to be mostly in the Good category, but may have a few spots with Moderate air quality.

Saturday May 8

Surface Winds: CANSAC shows winds light in the morning, but are anticipated to increase into the afternoon, mostly from the NW. Flow into the SJV via Altamont and Pacheco passes, and strong outflow in the southern SJV via the Tehachapi Pass.

Boundary Layer Mixing: Mixing should be slightly better than Friday, up to an elevation of 3,500 to 4,500 feet throughout most portions of the SJV.

Air Quality: Expected to be mostly in the Good category, but may have a few spots with Moderate air quality.

Sunday May 9

Surface Winds: Like Saturday, CANSAC again shows light winds in the morning, and strengthening from the NW as the day progresses, due to the incoming system. General

flow will be from the NW with a strong upsloping outflow over the Sierra Nevada by the afternoon. Slight chance for some precipitation by the evening.

Boundary Layer Mixing: CANSAC shows mixing improving up to 6,000 feet over the eastern central SJV by 17:00.

Air Quality: Due to passing system, air quality is expected to be Good District-wide.

Monday May 10

Surface Winds: GFS shows surface winds to be predominately from the W to NW throughout the day, with stability building in.

Boundary Layer Mixing: Mixing conditions are expected to worsen compared to Sunday, but should still be agreeable for good dispersion.

Air Quality: Expected to be Good to Moderate throughout the District.

Tuesday May 11

Surface Winds: GFS shows moderate flow from the NW, and turning from the N by the end of the day.

Boundary Layer Mixing: Expected to be similar to Monday.

Air Quality: Expected to be Good to Moderate throughout the District.

Potential Targets for Friday Flight Day

Outflow from western Kern County towards SLO County

Central Coast - Gary Arcemont (garcemont@co.slo.ca.us)

Yesterday: Strong NW flow. Exceedance of the California PM10 standard in Nipomo due to blowing sand & dust.

Current Wx: Mostly clear – stratus near SF Bay area. Breezy this morning. Ozone concentrations have remained elevated overnight along ridgetops of the eastern portions of the Coast Range - suggesting ozone transport aloft. Strong northeast winds ridgetops - interior portions of Coast Range.

Synopsis - Today 5/7 through Monday 5/10: Along coast - Strong NW flow surface & aloft, stronger surface NW flow afternoon. Good dispersion. Periods of E to NE winds inland ridgetops.

Today: Mostly clear along coast. NW flow surface & aloft, stronger surface NW flow afternoon. Strong Northeast winds ridgetops - interior portions of Coast Range. Sundowner winds (gusty, katabatic, downslope winds – from the N to NW) from Gaviota to Santa Barbara.

Saturday: Zonal flow. Trough approaching. Clouds increase.

Sunday: Trough. Chance of stray shower.

Monday: NW flow aloft. Trough moving east.

Tuesday: N flow aloft. Cutoff low over Nevada.

Air quality: Good air quality with the exception of blowing dust possible Oceano Dunes/Nipomo Mesa in the afternoon for much of the period – which should result in an increase in PM10 and moderate air quality in these areas. Good dispersion.

Suggested targets: Blowing dust plume Nipomo Mesa (San Luis Obispo County Coast) - midday/afternoon. Convergence zone between NW flow along coast and E-NE flow over the inland Coast Range. Layers with high concentration of ozone aloft over inland portions of the Coast Range.

SoCal Coastal Waters - Lee Eddington (Lee.Eddington@navy.mil)

See detailed slides and speaker notes in power point file

+ Thursday afternoon (00Z 07 May)

- Marine Low Clouds

- * CLR Crescent City to Palos Verdes
- * CLR/SCT St Palos Verdes to San Diego

- SOCAL Marine Layer Winds

- * W 5-10 kts inner waters

- * WNW 10-25 kts outer waters

+ Friday morning (12Z 07 May)

- Marine Low Clouds
 - * Mostly CLR/SCT StCu Crescent City to Monterey
 - * CLR Monterey to Palos Verdes
 - * OVC/BKN St/Fog Palos Verdes to San Diego
- SOCAL Marine Layer Winds
 - * ESE 0-10 kts inner waters
 - * WNW 10-25 kts outer waters

+ Friday afternoon (00Z 08 May)

- Marine Low Clouds
 - * SCT St/StCu Crescent City to Monterey
 - * CLR Monterey to Newport Beach
 - * SCT St Newport Beach to San Diego
- SOCAL Marine Layer Winds
 - * W 8-12 kts inner waters
 - * WNW 10-20 kts outer waters

+ Saturday morning (12Z 08 May)

- Marine Low Clouds
 - * BKN/SCT St/StCu Crescent City to Monterey
 - * CLR Monterey to Palos Verdes
 - * BKN/SCT St/Fog Palos Verdes to San Diego
- SOCAL Marine Layer Winds
 - * ESE 0-10 kts inner waters
 - * WNW 10-25 kts outer waters

+ Saturday afternoon (00Z 09 May)

- Marine Low Clouds

- * SCT StCu Crescent City to Monterey
- * CLR Monterey to Palos Verdes
- * BKN/SCT St Palos Verdes to San Diego

- SOCAL Marine Layer Winds

- * W 10-15 kts inner waters
- * WNW 15-30 kts outer waters

+ Sunday morning (12Z 08 May)

- Marine Low Clouds

- * BKN/SCT StCu Crescent City to Point Conception
- * CLR Point Conception to Palos Verdes
- * BKN/SCT StCu Palos Verdes to San Diego

- SOCAL Marine Layer Winds

- * ESE 0-5 kts inner waters
- * WNW 10-25 kts outer waters

+ Sunday afternoon (00Z 10 May)

- Marine Low Clouds

- * SCT StCu Crescent City to Point Arena
- * CLR Point Arena to Palos Verdes
- * BKN/SCT StCu Palos Verdes to San Diego

South Coast - Kevin Durkee (kdurkee@aqmd.gov)

Yesterday (Thursday): Weak trough lingers; stronger onshore push; deeper marine layer - weak coastal eddy present; AM coastal inversion base at NKX ~ 2900 feet this morning, LAXP ~ 1700 feet - with afternoon mixing expected to ~3600 feet at Downtown LA; AM low clouds and fog into inland valleys, less in LA county; some gusty winds still in mountains and deserts - wind advisories expiring at 10AM but still some gusts this afternoon into Friday morning; Moderate Ozone AQ, close, but no USG occurred inland

Today (Friday): Some gusty winds continue in mountains and deserts through morning; weak offshore flow in AM; onshore flow weakens this afternoon; pattern flattens a little and for slight warming this afternoon; eddy not evident in satellite imagery - no low clouds; relatively weak coastal inversion this morning (KNKX delta T < 4 deg C), IRVP base ~ 800 - 900 feet this morning; Max Mixing this afternoon ~1700 feet @ LAX, 3650 feet at Downtown LA; sea breeze in afternoon; Temps to mid-80s Inland Empire valleys; slight inland ozone bump - mostly moderate but some USG likely eastern Basin;

Saturday: more cyclonic flow aloft, lower heights with weak trough; cooling trend through weekend; increased onshore flow at surface - for a deeper marine layer and more low clouds & fog into valleys, but not widespread or uniform or far inland; temperatures a little cooler; stronger inversion with AM inversion base ~ 1500 feet; AM coastal eddy possible ahead of trof; AM low clouds and fog into valleys, mostly sunny afternoon; gusty winds in mountains and deserts; ozone good to moderate with peaks central San Bernardino Mountains (might still see some near-USG with weekend effect if still enough sunlight inland)

Sunday: Marine layer deepens as trof/low moves through central California; clouds increase - mostly cloudy; precip unlikely in so Cal.; Moderate Ozone, slight chance for mountains Sunday night with strong winds

Monday +: very slight chance of precip Sunday night/Monday morning; onshore flow with gusty winds - mainly mountains and deserts; still cool & cloudy AM but drier NW flow sets up bringing clear skies; marine layer may not reform very quickly with trofs moving through; inside slider Tuesday, dry with NW winds; ridging returns ~ Thursday +